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THE GOLDEN NEMATODE

of potatoes
and tomatoes

U.S. DEPT. OF AGRICULTURE
NATIONAL RESEARCH SERVICE

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The golden nematode, a tiny eel-worm, is one of the most damaging pests of potatoes.

It was first found in the United States in 1941 on Long Island, and in 1967 was found in Steuben County, New York. Although contained in these areas through a Federal and State program of plant pest control, it remains a threat to this country's \$800 million potato industry.

The golden nematode also attacks tomatoes and eggplants, but it is not considered a major pest of these plants.

DAMAGE

The golden nematode bores into the roots of potatoes and feeds on their juices. Because nematodes do not cause immediate damage to the aboveground part of an infested plant, they often go undetected for years.

Poor growth of plants in one or more small spots of a potato field is usually the first sign of an infestation. As the infestation builds up, the spot becomes larger and new damaged areas appear. Eventually the entire field shows poor growth.

Heavy infestations cause wilting (particularly at midday during dry weather), stunted growth, poor root development, and early plant death.

DEVELOPMENT

The golden nematode has three stages in its life cycle—egg, larva, and adult. The cycle takes 38 to 48 days.

The eggs are enclosed in protective

flask-shaped cysts—which are the dead, swollen bodies of the females. The cysts are smaller than a pinhead, and each of them contains up to 500 eggs and larvae.

The eggs remain dormant in soil until stimulated to hatch by a chemical released from the roots of host plants. The larvae then migrate to the roots and enter them. In the absence of host plants, the eggs can remain dormant for many years.

WHAT WE DO

Your Federal and State departments of agriculture cooperate in a nematode control program—an organized effort to prevent the spread of the golden nematode and to eventually eradicate it. Work under the program is of three kinds: survey, quarantine, and control.

Survey

Plant pest control workers inspect soil samples collected from potato fields and potato-grading stations. Surveys are conducted to detect new areas of infestation and to determine the limits of known infestations.

All potato fields on Long Island and in Steuben County and surrounding areas are surveyed. Potato fields in other areas of the country also are surveyed, but not as intensively as are those in infested areas.

Quarantine

Quarantine inspectors are on the lookout for nematodes in soil, burlap

THE GOLDEN NEMATODE

Background shows normal potato plant (left) and one exposed to heavy nematode attacks.

Greatly magnified portion of infested root:
A, Females just breaking through root surface.

B, partly developed cyst.

C, D, and E, progressive color changes of cysts.

cysts.

F, cyst in the soil.

G, cross section of cyst showing eggs and hatching larvae leaving cyst to enter roots.



bags, and packing straw that arrives in shipments from foreign countries.

New York regulations restrict the movement of the following materials from infested areas: potatoes and other root crops; tomato and eggplant transplants and other plants (except cuttings); bulbs, corms, rhizomes, and tubers of ornamental plants; soil or sod; hay, straw, and plant litter; used farm equipment; used farm product containers; and used construction equipment. Planting of seed potatoes and other hosts on infested fields is prohibited.

Control

Soil fumigation and the development of nematode-resistant potatoes are the two ways that we are fighting the golden nematode in New York.

Soil Fumigation

Infested fields are treated with a dichloropropane-dichloropropene mixture or a methyl isothiocyanate-chlorinated hydrocarbon mixture. The fumigant is applied by Federal and State plant pest control workers.

Resistant Varieties

The U.S. Department of Agriculture and Cornell University are developing nematode-resistant varieties of potatoes.

Two varieties that are resistant to the

golden nematode have been released—Peconic by Cornell and Wauseon by USDA. Seed potato growers are increasing the supply of Peconic and Wauseon planting stock for use by New York farmers. The new varieties are comparable in quality to the popular Katahdin. Katahdin and Peconic yield between 17 and 20 tons per acre. Wauseon is resistant to common scab, late blight, and latent and mild mosaic, as well as to the golden nematode.

USDA scientists are conducting advanced field tests on several unnamed resistant strains.

HOW YOU CAN HELP

You can help prevent the spread of the golden nematode if you—

- Do not use secondhand containers such as burlap bags, crates, and barrels, when harvesting potatoes.
- Do not bring used machinery on a farm unless it has been steam-cleaned or fumigated.
- Do not spread grader soil and debris from community graders onto farm lands.
- Do not grow potatoes or other host crops on infested fields.
- Plant only certified seed.
- Rotate crops on potato land, but do not include tomatoes or eggplants in the rotation.

Prepared by
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Agricultural Research Service

This publication supersedes leaflet 361, "The Golden Nematode of Potatoes and Tomatoes: How to Prevent Its Spread."

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